

PSYCHOLOGY

(8th Edition)

David Myers

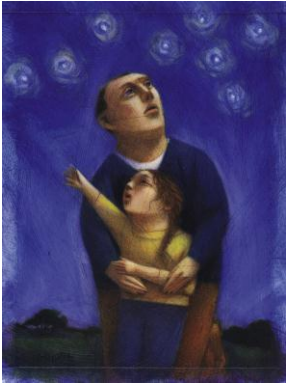
PowerPoint Slides

Aneeq Ahmad

Henderson State University



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Nature, Nurture, and Human Diversity

Chapter 3

Nature, Nurture, and Human Diversity

Behavior Genetics: Predicting Individual Differences

- Genes: Our Codes for Life
- Twin Studies
- Temperament Studies
- Heritability
- Gene-Environment Interaction
- The New Frontier: Molecular Genetics

Nature, Nurture, and Human Diversity

Evolutionary Psychology: Understanding Human Nature

- Natural Selection
- An Evolutionary Explanation of Human Sexuality
- Critiquing the Evolutionary Perspective

Nature, Nurture, and Human Diversity

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- Variations Across Cultures
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Nature, Nurture, and Human Diversity

Cultural Influences

- Culture and Child-Rearing
- Developmental Similarities Across Groups

Gender Development

- Gender Similarities and Differences

Nature, Nurture, and Human Diversity

Gender Development

- The Nature of Gender
- The Nurture of Gender

Reflections on Nature and Nurture

Nature, Nurture, and Human Diversity

| Similarities | Differences |
|---|--|
| Genes: Same set of chromosomes | Genes: Genetic anomalies may make us different |
| Biology: Organs and body functions same | Biology: May change during development |
| Brain: Same brain architecture | Brain: Asymmetry of brain across genders |
| Behaviors: Speak language | Behavior: Speak different languages |

Behavior Genetics: Predicting Individual Differences

Behavior Geneticists study our differences and weigh the relative effects of heredity and environment.

Genes: Our Codes for Life

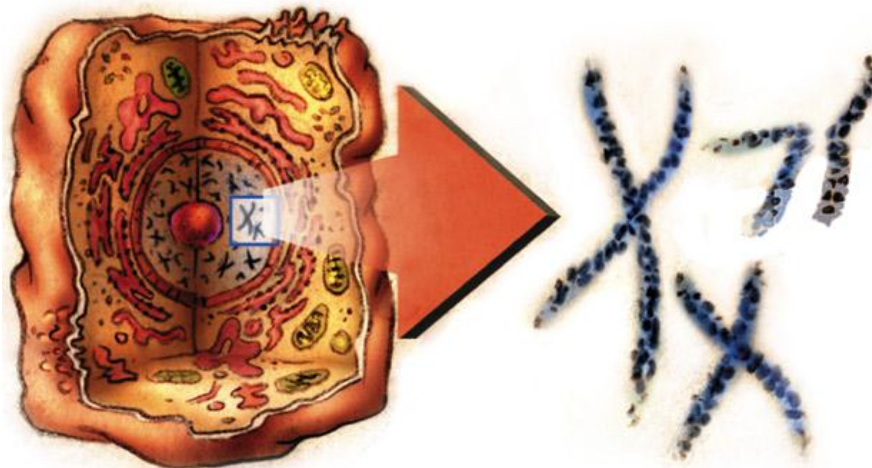
Chromosomes containing **DNA** (*deoxyribonucleic acid*) are situated in the nucleus of a cell.

Nucleus

(the inner area of a cell that houses chromosomes and genes)

Chromosome

(threadlike structure made largely of DNA molecules)



Cell

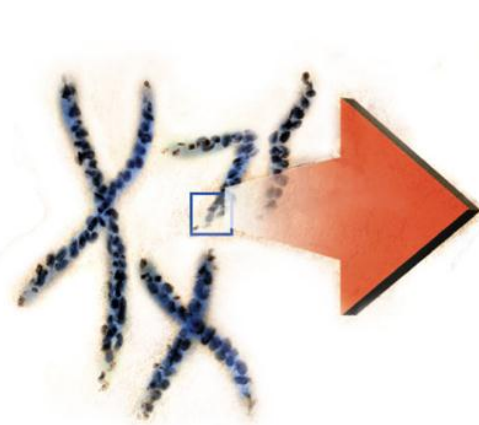
(the basic structural unit of a living thing)

Genes: Our Codes for Life

Segments within DNA consist of **genes** that make proteins to determine our development.

Chromosome

(threadlike structure made largely of DNA molecules)



DNA

(a spiraling, complex molecule containing genes)



Gene

(segment of DNA containing the code for a particular protein; determines our individual biological development)

Genome

Genome is the set of complete instructions for making an organism, containing all the genes in that organism. Thus, the human genome makes us human, and the genome for *drosophila* makes it a common house fly.

Twin Biology

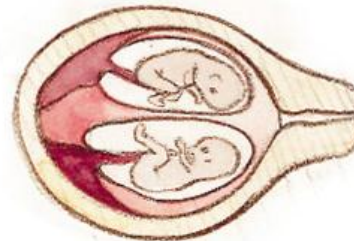
Studying the effects of heredity and environment on two sets of twins, identical and fraternal, has come in handy.

**Identical
Twin**



**Same sex
only**

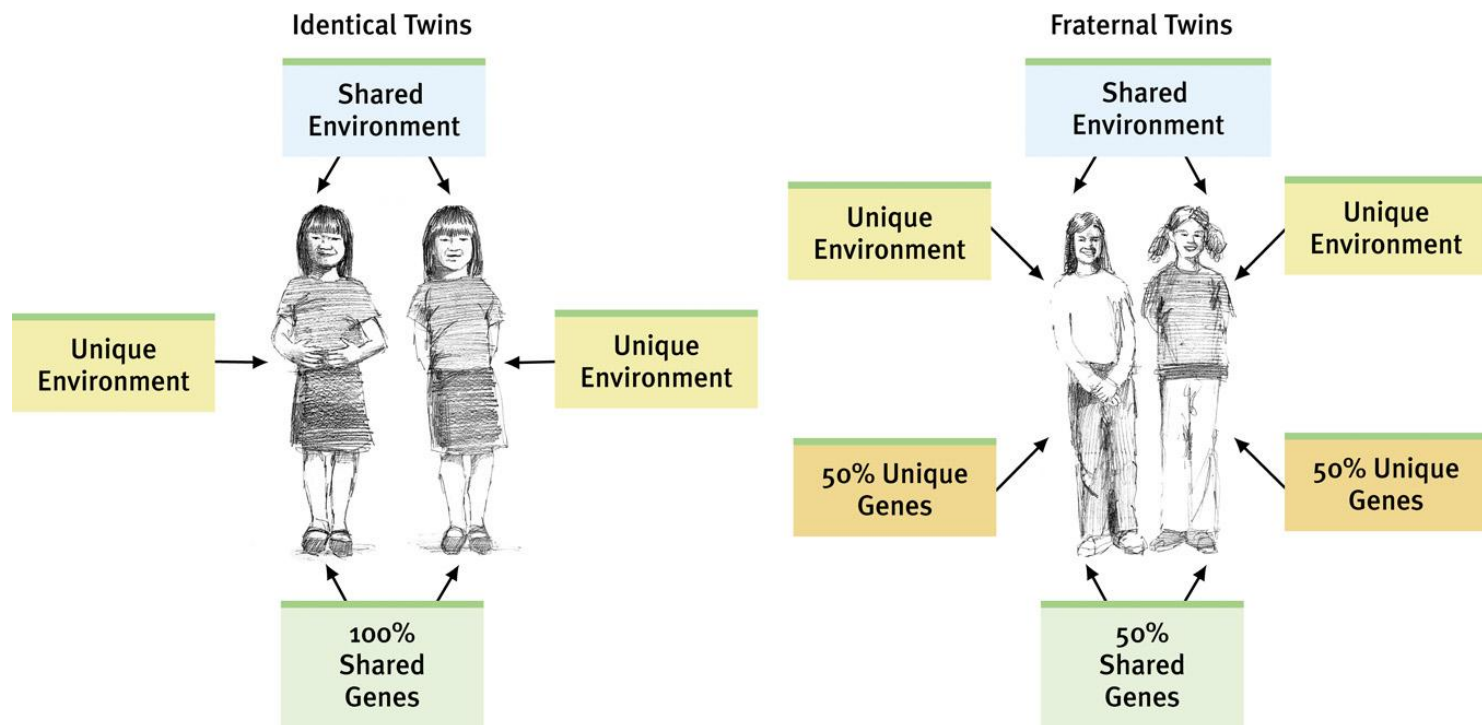
**Fraternal
twin**



**Same or
opposite
sex**

Twins and Procedures

Behavior geneticists' effects of shared and unique environments on total or partial genetic makeup.



Separated Twins

A number of studies compared identical twins raised separately from birth, or close thereafter, and found numerous similarities.

| Separated Twins |
|---------------------------|
| Personality, Intelligence |
| Abilities, Attitudes |
| Interests, Fears |
| Brain Waves, Heart Rate |

Separated Twins

Critics of separated twin studies note that such similarities can be found between strangers. Researchers point out that differences between fraternal twins are greater than identical twins.



Bob Sacha

Adoption Studies

Adoption studies, as opposed to twin studies, suggest that adoptees (who may be biologically unrelated) tend to be different from their adoptive parents and siblings.



Adoptive Studies

Adoptive studies strongly point to the simple fact that biologically related children turn out to be different in a family. So investigators ask:

Do siblings have differing experiences?

Do siblings, despite sharing half of their genes, have different combinations of the other half of their genes?

Ultimate question: Does parenting have an effect?

Parenting

Parenting does have an effect on biologically related and unrelated children.

| |
|--|
| Parenting Influences children's |
| Attitudes, Values |
| Manners, Beliefs |
| Faith, Politics |

Temperament Studies

Temperament refers to a person's stable emotional reactivity and intensity. Identical twins express similar temperaments, suggesting heredity predisposes temperament.

Heritability

Heritability refers to the extent to which the *differences among people* are attributable to genes.

Group Differences

If genetic influences help explain individual diversity in traits, can the same be said about group differences?

Not necessarily. Individual differences in weight and height are heritable and yet nutritional influences have made westerners heavier and taller than their ancestors were a century ago.

Nature *and* Nurture

Some human traits are fixed, such as having two eyes. However, most psychological traits are liable to change with environmental experience.

Genes provide choices for the organism to change its form or traits when environmental variables change. Therefore, genes are pliable or *self-regulating*.

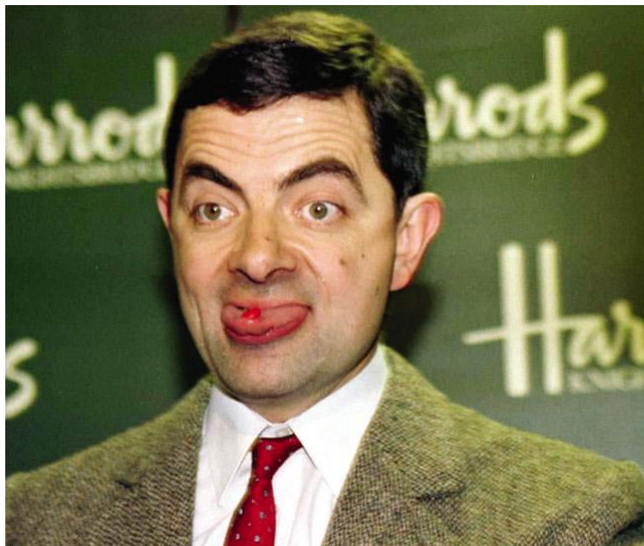
Gene-Environment Interaction

Genes can influence traits which affect responses, and environment can affect gene activity.

A genetic predisposition that makes a child restless and hyperactive evokes an angry response from his parents. A stressful environment can trigger genes to manufacture neurotransmitters leading to depression.

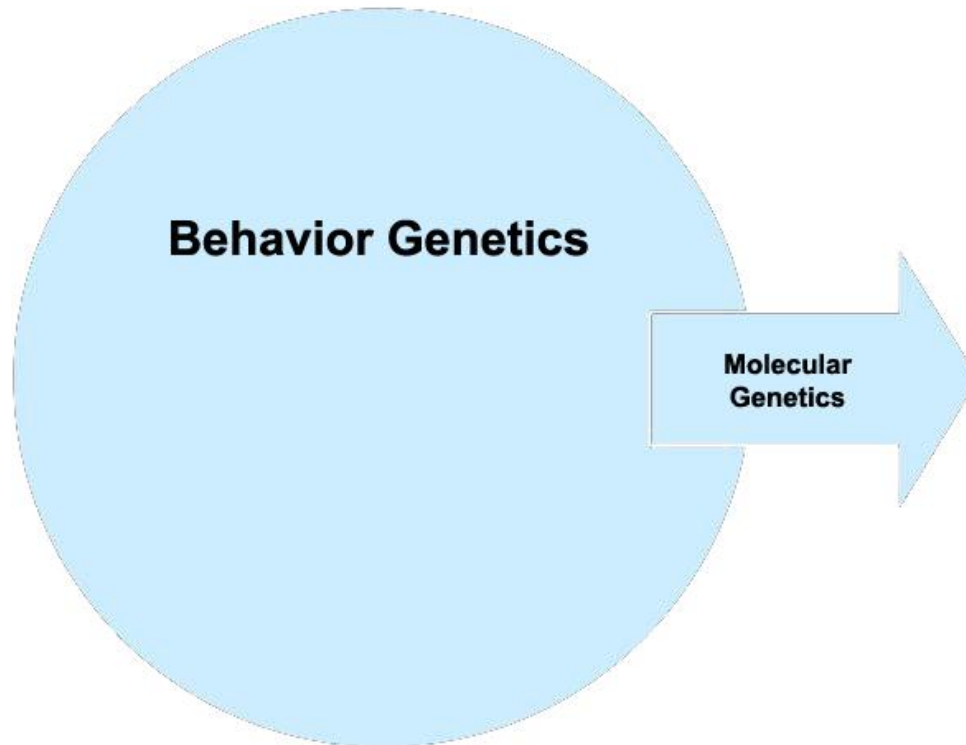
Gene-Environment Interaction

Genes and environment affect our traits individually, but more important are their interactive effects.



People respond differently to
Rowan Atkinson (Mr. Bean) than Orlando bloom.

The New Frontier: Molecular Genetics



Molecular genetics is a branch extension of behavior genetics that asks the question, “Do genes influence behavior?”

Molecular Genetics: Promises and Perils

Molecular geneticists are trying to identify genes that put people at risk for disorders. With this kind of knowledge, parents can decide to abort pregnancies in which the fetus is suspected of having such disorders.

However, this opens up a real concern regarding ethical issues involving such choices.

Evolutionary Psychology: Understanding Human Nature

Molecular genetics studies why we as organisms are distinct.

Evolutionary psychology studies why we as humans are alike. In particular, it studies the evolution of behavior and mind using principles of natural selection.

Natural Selection

Natural selection is an evolutionary process through which adaptive traits are passed on to ongoing generations because these traits help animals survive and reproduce.

Artificial Selection

Biologists like Belyaev and Trut (1999) were able to artificially rear and domesticate wild foxes, selecting them for friendly traits.



L.N. Trut, *American Scientist* (1999) 87: 160-169

Any trait that is favored naturally or artificially spreads to future generations.

Human Traits

A number of human traits have been identified as a result of pressures afforded by natural selection.

Why do infants fear strangers when they become mobile?

Why are most parents so passionately devoted to their children?

Why do people fear spiders and snakes and not electricity and guns?

Human Sexuality

Gender Differences in Sexuality

Males and females, to a large extent, behave and think similarly. Differences in sexes arise in regards to reproductive behaviors.

| Question (summarized) | Male | Female |
|--------------------------|------|--------|
| Casual sex | 60% | 35% |
| Sex for affection | 25% | 48% |
| Think about sex everyday | 54% | 19% |

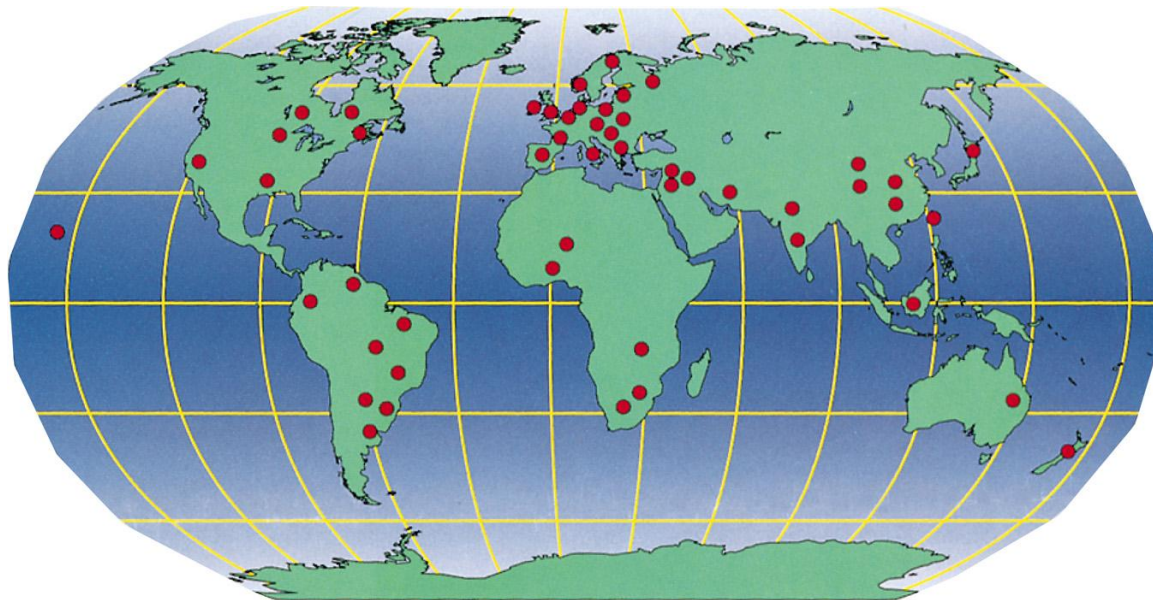
Mating Preferences

Natural selection has caused males to send their genes into the future by mating with multiple females since males have lower costs involved.

However, females select one mature and caring male because of the higher costs involved with pregnancy and nursing.

Mating Preferences

Males look for youthful appearing females in order to pass their genes into the future. Females, on the other, hand look for maturity, dominance, affluence and boldness in males.



Data based on 37 cultures.

Critiquing the Evolutionary Perspective

Evolutionary psychologists take a behavior and work backward to explain it in terms of natural selection.

Evolutionary psychology proposes genetic determinism and undercuts morality in establishing society.

Where genders are unequal, gender preferences are wide, but when they are closely equal, preferences narrow down.

Evolutionary Psychologists Reply

Evolutionary psychologists argue that we need to test behaviors that expound evolutionary principles.

Evolutionary psychologists remind us how we have adapted, but do not dictate how we ought to be.

Males and females are more alike than different, and if we study these differences we can establish their causes.

Parents and Peers

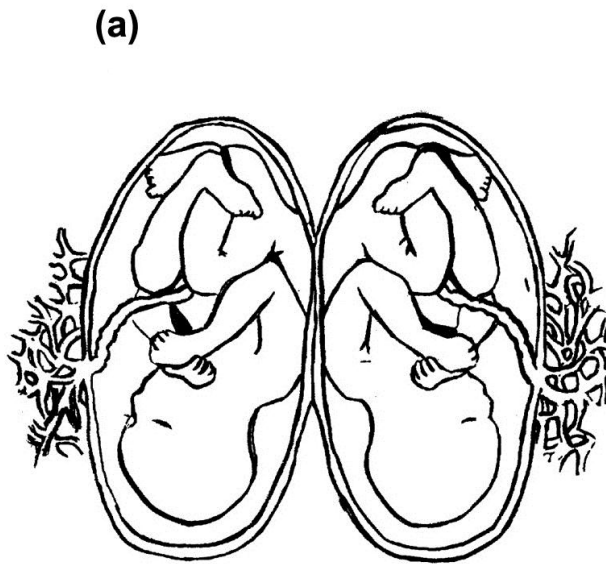
Parents and Early Experiences

We have looked at how genes influence our developmental differences. What about the environment? How do our early experiences, our family, our community and our culture affects these differences?

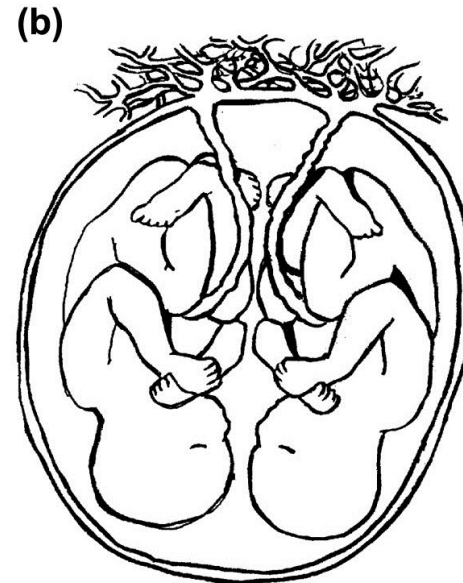
We begin with the prenatal environment.

Prenatal Environment

Identical twins who share the same placenta (b) are more alike than those who do not (a), suggesting prenatal influences on psychological



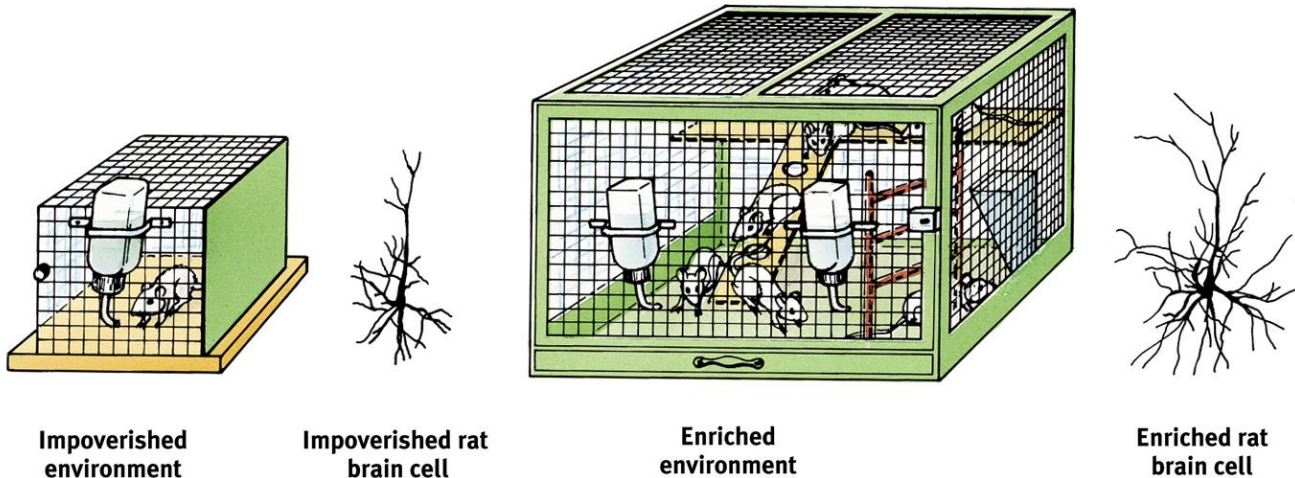
33% of identical Twins



66% of identical Twins

Experience and Brain Development

Early postnatal experiences affect brain development. Rosenzweig et al. (1984) showed that rats raised in enriched environments developed thicker cortices than those in impoverished environments.



Experience and Faculties

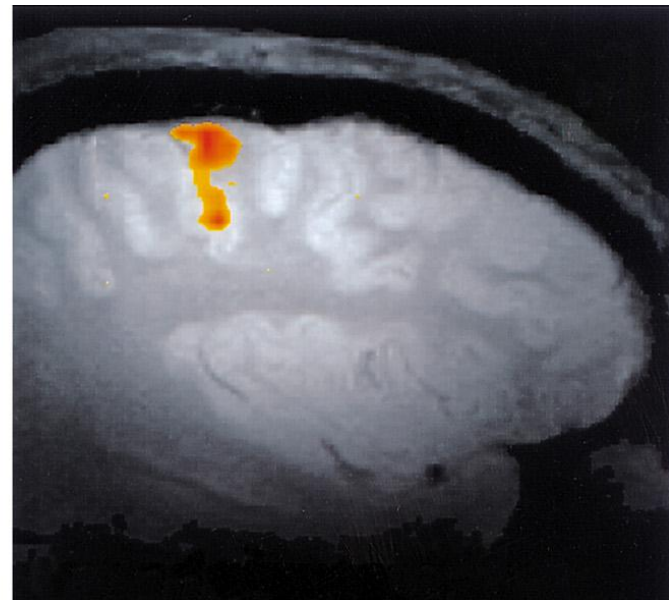
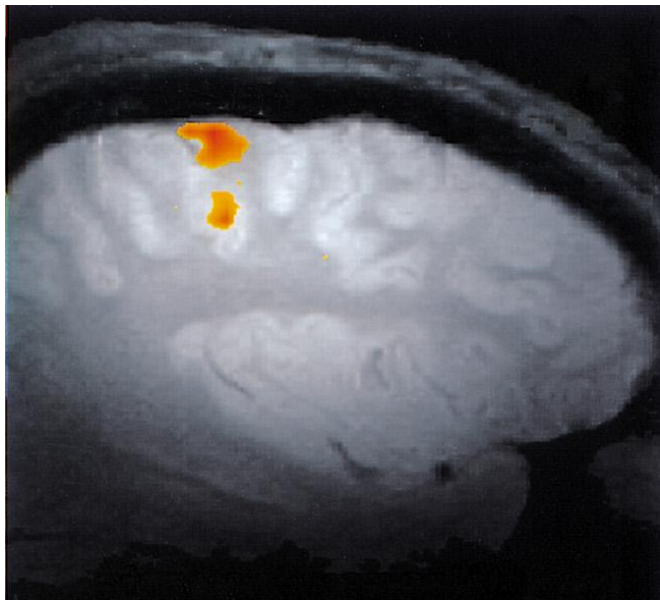
Early experiences during development in humans shows remarkable improvements in music, languages and the arts.



Courtesy of C. Brune

Brain Development and Adulthood

Brain development does not stop when we reach adulthood. Throughout our life, brain tissue continues to grow and change.



Both photos courtesy of Avi Kani and Leslie Ungerleider, National Institute of Mental Health

A well-learned finger-tapping task leads to more motor cortical neurons (right) than baseline.

Parental Influence

Parental influence is largely genetic. This support is essential in nurturing children. However, other socializing factors also play an important role.



Miguel L. Fairbanks

Although raised in the same family, some children are greater risk takers.

Peer Influence

Children, like adults, attempt to fit into a group by conforming. Peers are influential in such areas as learning to cooperate with others, gaining popularity, and developing interactions.



Ole Graf / zeta / Corbis

Cultural Influences

Humans have the ability to evolve culture.
Culture is composed of behaviors, ideas, attitudes,
values and traditions shared by a group.



Kevin R. Morris/Corbis

Variation Across Culture

Cultures differ. Each culture develops **norms** – rules for accepted and expected behavior. Men holding hands in Saudi Arabia is the norm (closer **personal space**), but not in American culture.



Jason Reed/Reuters/Corbis

Variation Over Time

Cultures change over time. The rate of this change may be extremely fast. In many Western countries, culture has rapidly changed over the past 40 years or so.

This change cannot be attributed to changes in the human gene pool because genes evolve very slowly.

Culture and the Self

If a culture nurtures an individual's personal identity, it is said to be **individualist**, but if a group identity is favored then the culture is described as **collectivist**.

A collectivist support system can benefit groups who experience disasters such as the 2005 earthquake in Pakistan.



Culture and the Self

VALUE CONTRASTS BETWEEN INDIVIDUALISM AND COLLECTIVISM

| Concept | Individualism | Collectivism |
|-----------------------------|--|---|
| Self | Independent (identity from individual traits) | Interdependent (identity from belonging) |
| Life task | Discover and express one's uniqueness | Maintain connections, fit in, perform role |
| What matters | Me—personal achievement and fulfillment; rights and liberties; self-esteem | Us—group goals and solidarity; social responsibilities and relationships; family duty |
| Coping method | Change reality | Accommodate to reality |
| Morality | Defined by individuals (self-based) | Defined by social networks (duty-based) |
| Relationships | Many, often temporary or casual; confrontation acceptable | Few, close and enduring; harmony valued |
| Attributing behavior | Behavior reflects one's personality and attitudes | Behavior reflects social norms and roles |

Sources: Adapted from Thomas Schoeneman (1994) and Harry Triandis (1994).

Culture and Child-Rearing

Individualist cultures (European) raise their children as independent individuals whereas collectivist cultures (Asian) raise their children as interdependent.



Jose Luis Palaez, Inc./ Corbis

Culture and Child-Rearing

| Westernized Cultures | Asian-African Cultures |
|---------------------------|-------------------------------|
| Responsible for your self | Responsible to group |
| Follow your conscience | Priority to obedience |
| Discover your gifts | Be true to <i>family-self</i> |
| Be true to yourself | Be loyal to your group |
| Be independent | Be interdependent |

Developmental Similarities Across Groups

Despite diverse cultural backgrounds, humans are more similar than different in many ways. We share the same genetic profile, life cycle, capacity for language, and biological needs.



Copyright Steve Reehl

Gender Development

Based on genetic makeup, males and females are alike, since the majority of our inherited genes (45 chromosomes are unisex) are similar.

Males and females differ biologically in body fat, muscle, height, onset of puberty, and life expectancy.

Gender Differences in Aggression

Men express themselves and behave in more aggressive ways than do women. This aggression gender gap appears in many cultures and at various ages.

In males, the nature of this aggression is physical.

Gender and Social Power

In most societies, men are socially dominant and are perceived as such.

In 2005, men accounted for 84% of the governing parliaments.

Gender Differences and Connectedness

Young and old, women form more connections (friendships) with people than do men. Men emphasize freedom and self-reliance.



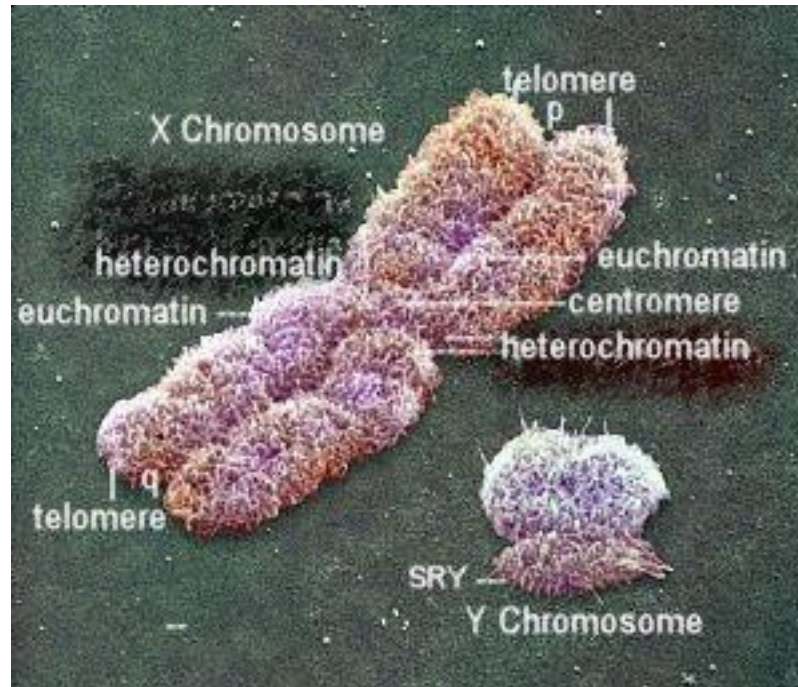
Oliver Eltinger / Zefa / Corbis



Dex Image / Getty Images

Biology of Sex

Biological sex is determined by the twenty-third pair of chromosomes. If the pair is XX, a female is produced. If the pair is XY, a male child is produced.



Sexual Differentiation

In the mother's womb, the male fetus is exposed to testosterone (because of the Y chromosome), which leads to the development of male genitalia.

If low levels of testosterone are released in the uterus, the result is a female.

Sexual Differentiation

Sexual differentiation is not only biological, but also psychological and social.

However, genes and hormones play a very important role in defining gender, especially in altering the brain and influencing gender differences as a result.

Gender Roles

Our culture shapes our **gender roles** — expectations of how men and women are supposed to behave.

Gender Identity — means how a person views himself or herself in terms of gender.

Gender Roles: Theories

1. **Gender Schema Theory** suggests that we learn a cultural “recipe” of how to be a male or a female, which influences our gender-based perceptions and behaviors.
2. **Social Learning Theory** proposes that we learn gender behavior like any other behavior—reinforcement, punishment, and observation.

Reflections on Nature and Nurture

Biological influences:

- Shared human genome
- Individual genetic variations
- Prenatal environment
- Sex-related genes, hormones, and physiology

Psychological influences:

- Gene-environment interaction
- Neurological effect of early experiences
- Responses evoked by our own temperament, gender, etc.
- Beliefs, feelings, and expectations

Personal
development

```
graph TD; A[Biological influences] --> D[Personal development]; B[Psychological influences] --> D; C[Social-cultural influences] --> D;
```

The diagram illustrates the factors influencing personal development. It features three colored boxes at the top: a light blue box for biological influences, a light yellow box for psychological influences, and a light green box for social-cultural influences. Each box contains a list of specific factors. Green arrows from each of these three boxes point towards a central purple box labeled 'Personal development'. A fourth green arrow points upwards from the social-cultural influences box to the central box.

Social-cultural influences:

- Parental influences
- Peer influences
- Cultural individualism or collectivism
- Cultural gender norms